In the Claims

1. (Currently amended) A computerized method of graph rewriting, a graph having nodes representing entities and edges between the nodes representing relationships between entities, the method comprising:

comparing an input graph representing a description scheme for multimedia content with a set of pre-defined template graphs, the description scheme representing structure and semantics of the multimedia content, and the template graphs representing model description schemes; and

validating the input graph when there is a match with a template graph.

2. (Original) The computerized method of claim 1, wherein the comparing uses a graph matching process.

3. (Original) The computerized method of claim 2, wherein the comparing comprises:

creating adjacency matrices representing the input graph and the set of template graphs.

4. (Original) The computerized method of claim 1 further comprising:

evaluating the input graph against a set of pre-defined alphabet graphs; and

applying a rule associated with a matching alphabet graph to the input graph, the rule represented by a rule graph and a set of morphism graphs.

5. (Original) The computerized method of claim 4, wherein the evaluating uses a graph matching process.

6. (Original) The computerized method of claim 5, wherein the evaluating comprises:

creating adjacency matrices for the input graph and the set of alphabet graphs.

7. (Original) The computerized method of claim 4, wherein the applying comprises:

performing a pushout operation.

8. (Original) The computerized method of claim 4, wherein the applying comprises:

performing a pullback operation.

9. (Original) The computerized method of claim 8, wherein performing the pullback operation comprises:

creating adjacency matrices representing smallest portions of the set of morphism graphs that map the input and rule graphs to the alphabet graph using pre-images of parts of the alphabet graph marked for change; and

multiplying the adjacency matrix associated with the input graph by a transpose of the adjacency matrix associated with the rule graph.

10. (Currently amended) A computer-readable medium having executable instructions to cause a computer to perform a method of graph rewriting, a graph having nodes representing entities and edges between the nodes representing relationships between entities, the method comprising:

comparing an input graph representing a description scheme for multimedia content with a set of pre-defined template graphs, the description scheme representing structure and semantics of the multimedia content, and the template graph representing model description schemes; and

validating the input graph when there is a match with a template graph.

11. (Original) The computer-readable medium of claim 10, wherein the comparing uses a graph matching process.

12. (Original) The computer-readable medium of claim 11, wherein the comparing comprises:

creating adjacency matrices representing the input graph and the set of template graphs.

13. (Original) The computer-readable medium of claim 11, wherein the method further comprises:

evaluating the input graph against a set of pre-defined alphabet graphs; and

applying a rule associated with a matching alphabet graph to the input graph, the rule represented by a rule graph and a set of morphism graphs.

14. (Original) The computer-readable medium of claim 13, wherein the evaluating uses a graph matching process.

15. (Original) The computer-readable medium of claim 14, wherein the evaluating comprises:

creating adjacency matrices for the input graph and the set of alphabet graphs.

16. (Original) The computer-readable medium of claim 13, wherein the applying comprises:

performing a pushout operation.

17. (Original) The computer-readable medium of claim 13, wherein the applying comprises:

performing a pullback operation.

18. (Original) The computer-readable medium of claim 17, wherein performing the pullback operation comprises:

creating adjacency matrices representing smallest portions of the set of morphism graphs that map the input and rule graphs to the alphabet graph using pre-images of parts of the alphabet graph marked for change; and

multiplying the adjacency matrix associated with the input graph by a transpose of the adjacency matrix associated with the rule graph.

19. (Currently amended) A system configurable for graph rewriting, a graph having nodes representing entities and edges between the nodes representing relationships between entities, the system comprising:

a processor coupled to a memory through a bus; and

a validation process executed by the processor from the memory to cause the processor to compare an input graph representing a description scheme for multimedia content with a set of pre-defined template graphs, and to validate the input graph when there is a match with a template graph, wherein the description scheme represents structure and semantics of the multimedia content, and the template graphs represent model description schemes.

20. (Original) The system of claim 19, wherein the validation process causes the processor to execute a graph matching process from the memory to compare the input graph and the template graphs.

21. (Original) The system of claim 20, wherein the validation process further causes the processor to create adjacency matrices for the input graph and the set of template graphs to compare the input graph and the template graphs.

22. (Original) The system of claim 19, further comprising a modification process executed by the processor from the memory to cause the processor to evaluate the input graph against a set of pre-defined alphabet graphs, and to apply a rule associated with a matching alphabet graph to the input graph, wherein the rule is represented by a rule graph and a set of morphism graphs.

23. (Original) The system of claim 22, wherein the modification process further causes the processor to execute a graph matching process from the memory to evaluate the input graph.

24. (Original) The system of claim 23, wherein the modification process further causes the processor to create adjacency matrices for the input graph and the set of alphabet graphs to evaluate the input graph.

25. (Original) The system of claim 22, wherein the modification process further causes the processor to perform a pushout operation to apply the rule.

26. (Original) The system of claim 22, wherein the modification process further causes the processor to perform a pullback operation to apply the rule.

27. (Original) The system of claim 26, wherein the modification process further causes the processor to create adjacency matrices representing smallest portions of the set of morphism graphs that map the input and rule graphs to the alphabet graph using pre-images of parts of the alphabet graph marked for change, and to multiply the adjacency matrix associated with the input graph by a transpose of the adjacency matrix associated with the rule graph. to perform the pullback operation.